Smart Rivers Conference

Waterway Project Assessment in Finland

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Finnish Maritime Administration

Waterway Project Assessment in Finland

Structure of the presentation:

1. Finland, general information
2. The Finnish Maritime Administration
3. Waterways in Finland and seaborne trade
4. Project assessment
5. Decision making process
6. Conclusions

Finland in a nutshell

Finland in a nutshell

- **Population 5.3 million**
- **Area 338 000 sq km (~130 500 sq miles)**
- **GDP: 167.9 mrd Euros (~228 mrd USD)**
- **GDP per capita: 31,886 Euros (~43,400 USD)**
- **Import value: 55.3 mrd Euros (~75.2 mrd USD)**
- **Export value: 61.5 mrd Euros (~83.6 mrd. USD)**

The Finnish Maritime Administration

Board Director-general Public relations Internal auditing				
Waterways department	**Hydrographic department**	**Winter navigation department**	**Traffic department**	**Maritime safety department**
Waterway technology Traffic and logistics Regional units (3)	Hydrography Hydrographic information Cartography	(Supervising authority and procurer of ice-breaker services)	(process managers) Telematics service Traffic units (2)	Ship inspection Marine technology Certification of seafarers Boating Regional inspection bureaus(4)
Special units:	Commuter services		Legal matters & marine statistics	
Support functions:	Finance	Administration	IT	
Internal production				
Waterway production	Waterways planning	Survey production	Chart production	

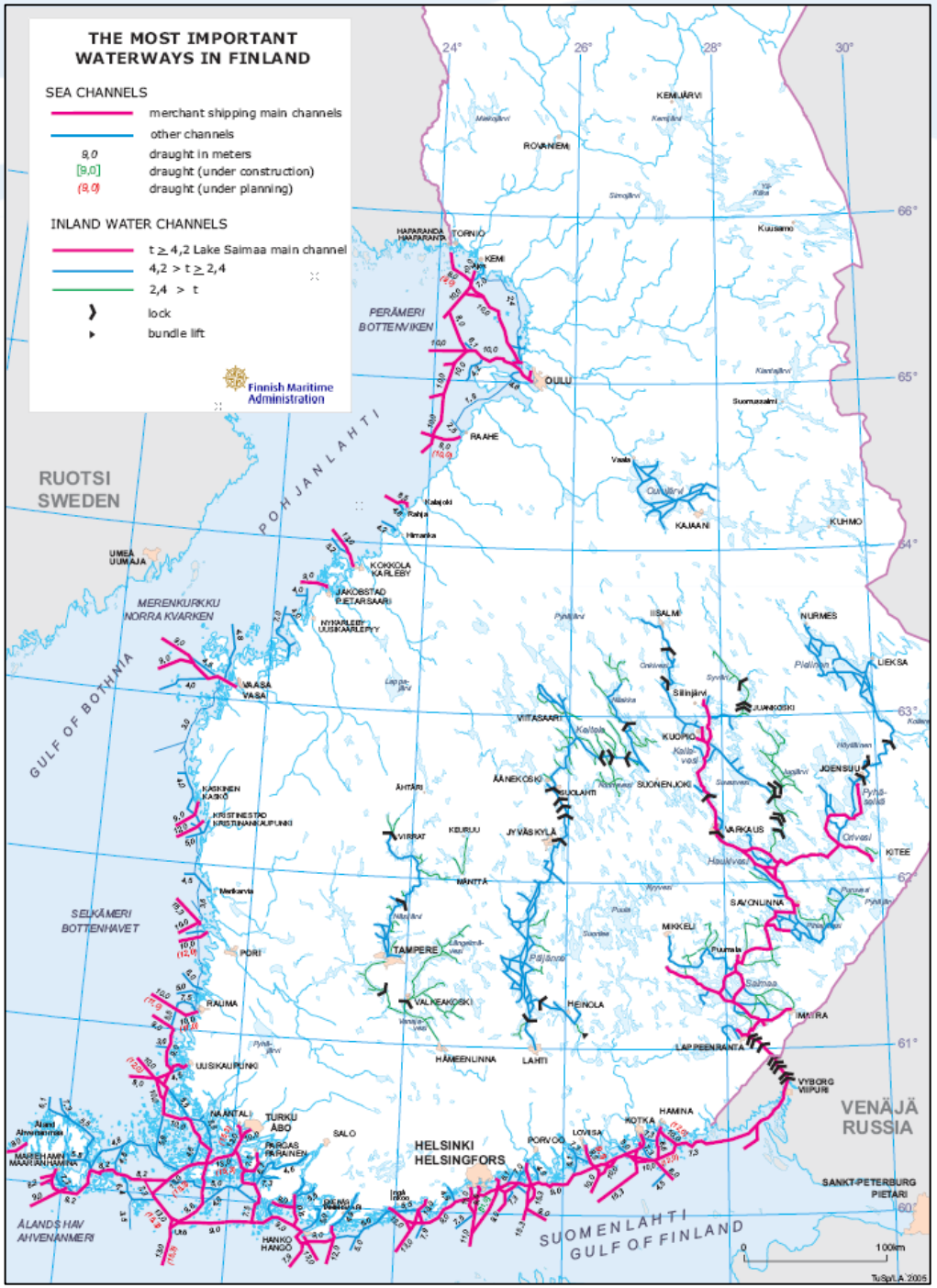
Finnish waterways:

FMA is in charge of:

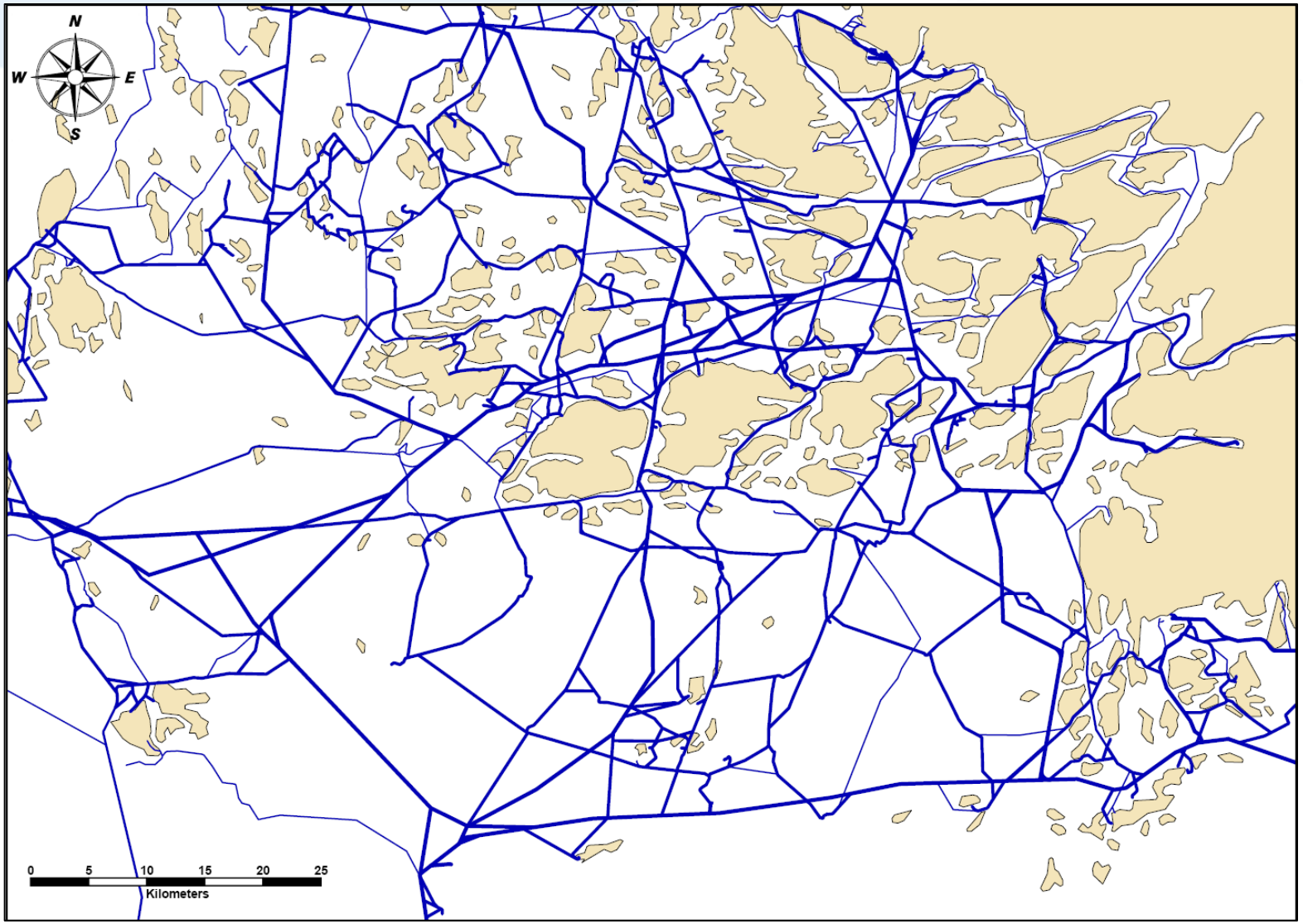
- **Coastal fairways 8171 km**
- **Inland waterways 8021 km**
- **About 25 000 AtoN**
- **39 lock channels**

Additionally in Finland there is private owned:

- **Coastal fairways 1808 km**
- **Inland waterways 1520 km**
- **About 7 500 AtoN**

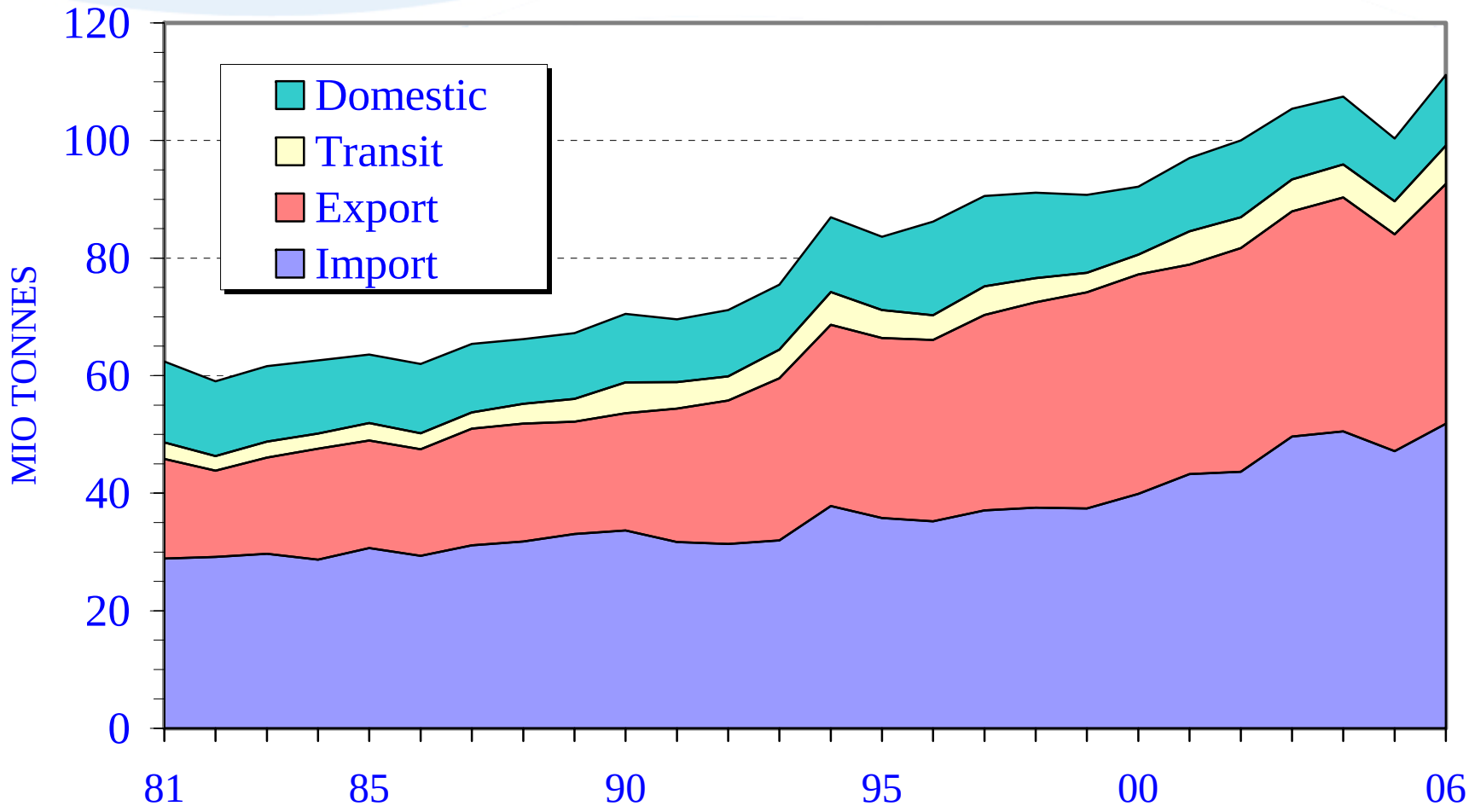


Finnish archipelago is wide and waters are shallow



SEABORNE CARGO TRAFFIC VIA FINNISH PORTS 1981-2006

BY TYPE OF TRADE



General assessment framework

- **The Ministry of Transport and Communications requires that all traffic modes use the same general assessment method**
- **This ensures the comparability of traffic infrastructure projects between and within traffic modes**
- **Apart from the general Ministry guidelines there are more specific guidelines for each traffic mode**
- **Finnish Maritime Administration's (FMA) guidelines for waterway investment assessment (2005)**

FMA assessment guidelines, basic points

- **Assessment of investments in waterways is normally easier than for road or rail projects:**
  - **Focus is on goods traffic, the role of passenger traffic usually not central**
  - **Less impact on other traffic modes, land use structure etc.**
  - **Exception: large inland waterways investments**

- **The main socio-economic benefits are decreasing transport costs**

Assessment framework for waterways investments

Project description

- **Cost estimate, traffic forecasts……**

Impact description e.g.:

- **Decrease of transport costs**
- **Improvement of maritime safety**
- **Changes in waterway maintenance costs**
- **Cost changes in pilotage, VTS, icebreaking etc.**
- **Air emissions, noise, other environmental impacts…….**

Impact assessment

- **Cost-benefit calculation (socio-economic profitability)**
- **Effectiveness assessment**
- **Feasibility assessment**

Cost-benefit calculation

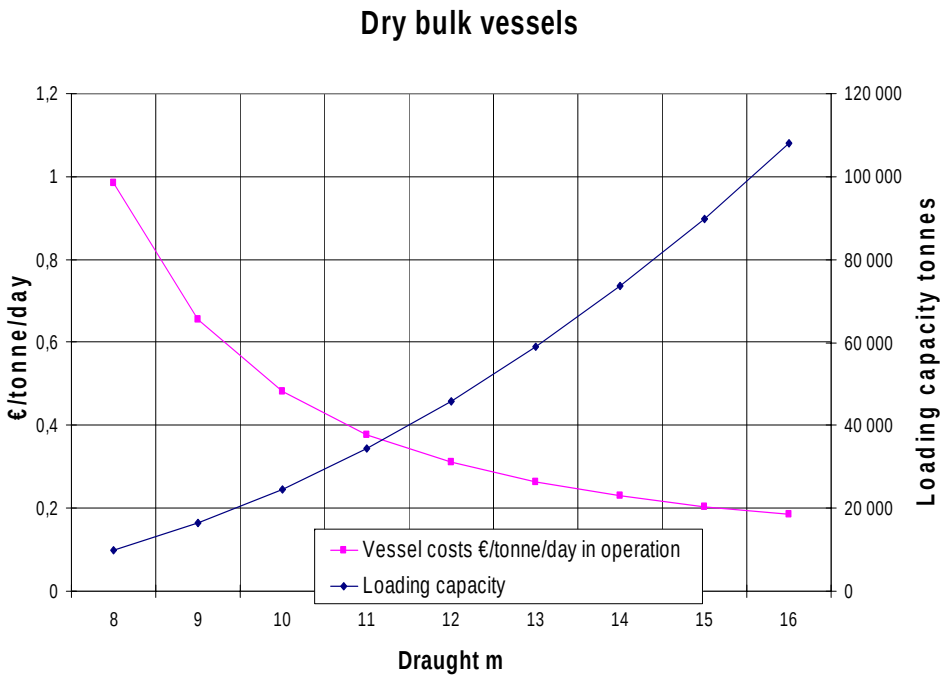
- **Cost-benefit analysis is most central part of project assessment, end result is the net benefit-cost ratio (b/c)**

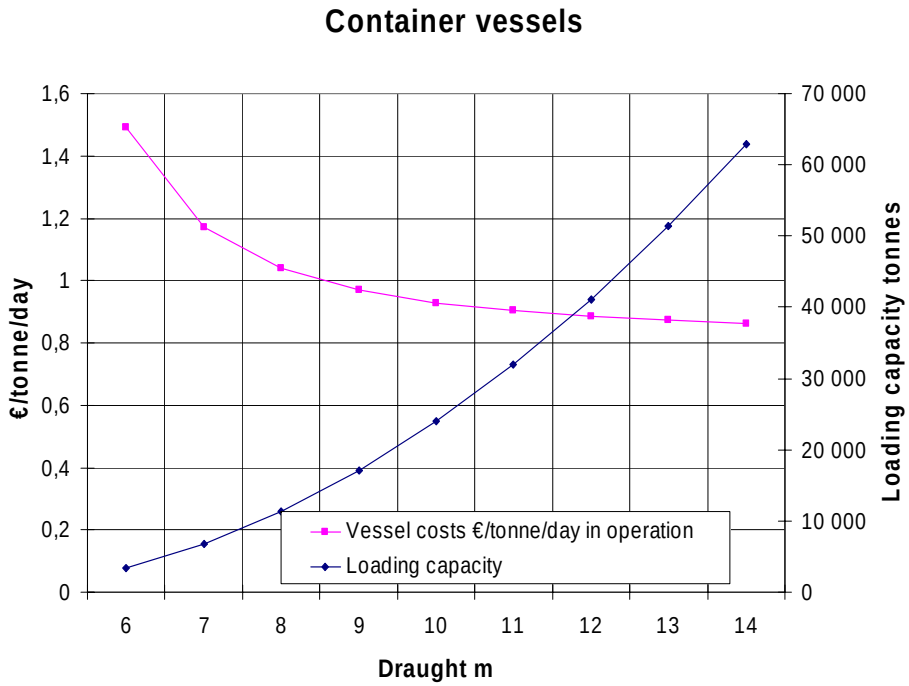
$$b/c\text{-ratio} = \frac{benefits - costs + residual\ value}{investment\ cost}$$

(calculation period 30 years, interest rate 5%, residual value 25% of investment cost)

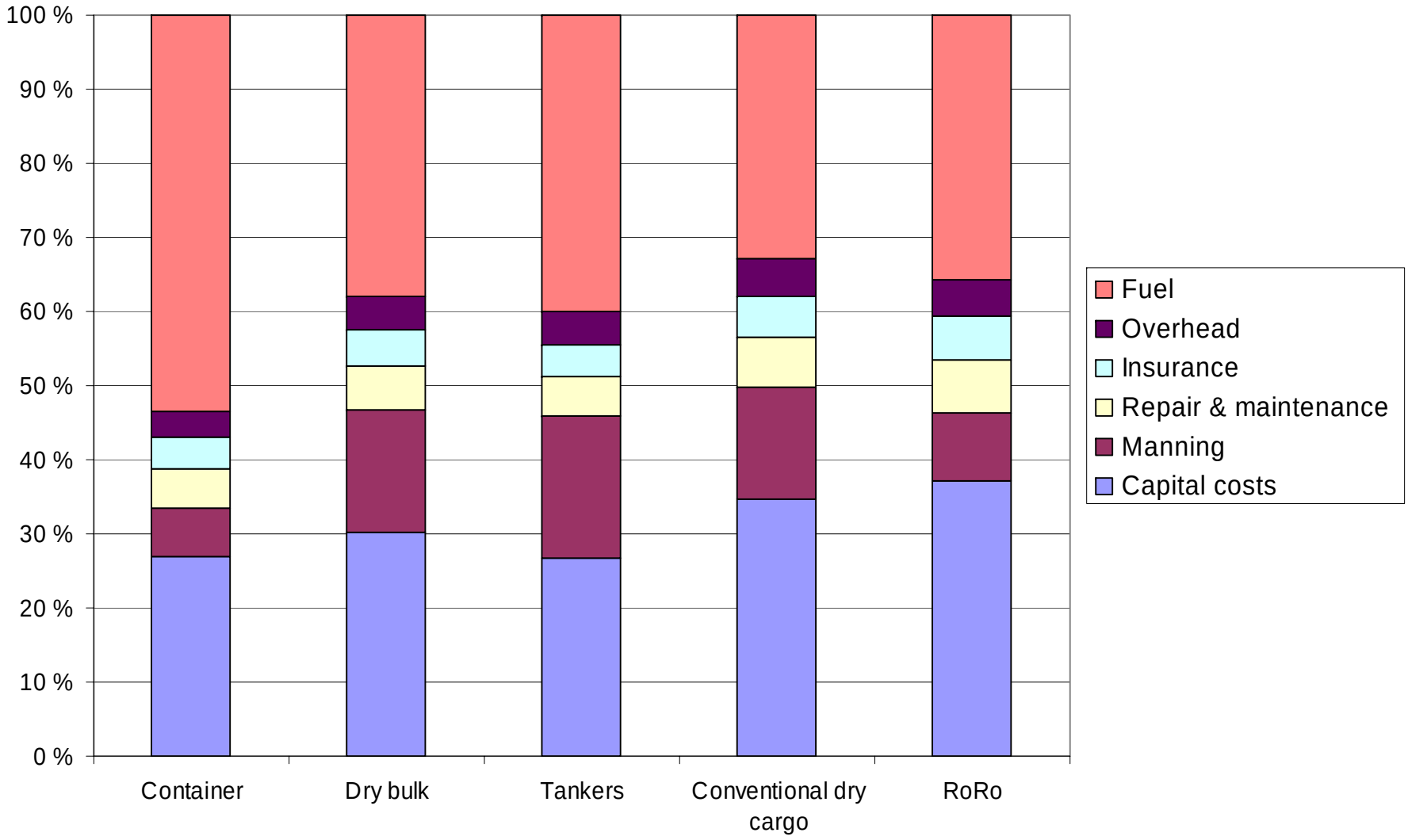
- **Monetary values included in calculation: changes in transport costs, accident costs, maintenance costs, emission costs etc.**
- **Changes in transport costs are estimated by a vessel cost model developed by FMA**
- **Air emission unit costs are confirmed by the Ministry of Transport**
- **Regional economic development and employment impacts are not to be included in cost-benefit analysis**

Examples of transport cost vs. vessel size (draught, loading capacity)





Relative shares of cost components per type of vessel



Unit cost of air emissions (euro/tonne): open sea, coastal channels, inland waterways, ports

Type of emission	Open sea (Baltic Sea) €/tonne	Coastal channel €/tonne	Inland waterway €/tonne	Port €/tonne
CO	0.4	2	23	19
HC	137	153	197	148
NO_x	301	397	569	1 062
Particles	3 410	5 610	9 580	26 880
CO_2	32	32	32	32
SO_2	327	547	684	2 283

Decision making process

1. FMA’s 10-year development program (project list in order of importance)
2. FMA’s 4-year action and economic plan
3. Project proposal to the state budget
4. Decision of the government

Permit Procedure

1. Three regional environment permit authorities
   - Decision based on the water law
2. Complain Authorities:
   - Administrative Court
   - Supreme Administrative Court

The permit procedure can last for 5 years!!

Conclusions

1. A general framework enables comparability of traffic infrastructure project on the same basis
2. The main benefits in waterway projects are the savings in transport costs
3. A general framework requires harmonised unit costs
4. The political decision making process should be based on the assessment
5. The permit procedure may influence considerably on the project timetable

Thank you!